Vinicius Lima

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Qualification Summary:	- PhD candidate in Computer and Information Technology at Purdue University, specializing in Data Science and Cybersecurity. - Research focus on the intersection of Machine Learning, Criminology, and Forensic Sciences, with 8 academic papers as first author. - Instructor for junior and senior undergraduate students in Cyber Forensics. - Led the Forensic Accident Sector for 2 years, managing a team of 25 forensic analysts. - 9 years of law enforcement experience, certified in Forensic Sciences, and ranked 29th in the Police Academy selection process. - Awarded a Leadership and Management scholarship by the Federal District Government to study at the University of Applied Sciences, Austria.

EDUCATION

Purdue University, West Lafayette, IN - USA.
Ph.D. in Computer and Information Technology, Expected degree completion: May 2025.
- Research Focus: Identification of Criminal Pattern Behavior in Forensic Evidence through Natural Language Processing.
- Main Coursework: Statistics, Machine Learning, Deep Learning, Natural Language Processing, Criminology, Forensic Sciences, Digital Forensics.

University of Brasilia, Brasilia, Federal District
Master in Computer Forensics, December 2016.
- Thesis: Accelerometer and Gyroscope Propose to Improve Forensic Work in Brazil.
- Coursework: Machine Learning, Cryptography, Digital Forensics, Operational Systems, Intelligent Systems, Forensics Sciences.

Federal District Civil Police Academy, Brasilia, Federal District, Brazil
Specialization in Forensic Sciences, October 2012.
- Coursework: Criminalistics, Ballistics, Crime Scene Evidence, Forensic Chemistry, Forensic Biology, Digital Forensics, Forensic Engineering, Accident Reconstruction, Document Analysis, and Chain of Custody.

University of Brasilia, Brasilia, Federal District, Brazil
Bachelor in Network Engineering, July 2011.
- Concentration in: Telecommunications and Network Communication Technologies.

PROFESSIONAL EXPERIENCE

Purdue University, West Lafayette, IN, USA.
Instructor, Aug 2024 - present.
Lectured 120+ students for Cyber Forensic undergraduate course and managed 5 lab sections. Mentored two undergraduate students gathering research and NLP skills with the support of the Honors College Mentorship Program.

Purdue University, West Lafayette, IN, USA.
Graduate Assistant, May 2024 - Aug 2024.
Mentored a group of 16 undergraduate students in research and professional skill development as part of the Summer Undergraduate Research Fellowship (SURF).

Purdue University, West Lafayette, IN, USA.
Teaching Assistant, Aug 2023 - May 2024.
Led Data Visualization and Cyber Forensics undergraduate courses, instructing 50+ students in each course, across two lab sections. Coordinated lab activities, assignments, and engaged students in group projects.

Feeding America, Chicago, IL, USA.
Data Analyst Intern, Jun 2023 - Aug 2023.
Provided impactful insights through data analysis and developed meaningful data visualization products to support team decision-making. Leveraged Python, Tableau, and NetSuite to streamline and enhance data processes.

Purdue University, West Lafayette, IN, USA.
Research Assistant, Aug 2021 - May 2023.
Research on "Identifying Risk Patterns in Brazilian Police Reports Preceding Femicides: A LSTM Based Analysis": NLP analysis of crime reports for sentiment analysis and sequence of patterns identification. Paper accepted in 2023 IEEE GHTC.
Filetsar+ project: Collaborating with faculty and students to develop a tool for digital forensics in network file analysis. Acquired hands-on experience in Linux, Docker, ElasticSearch, and Kibana.
Research on "Hotspot Prediction of Severe Traffic Accidents in the Federal District of Brazil": Applied machine learning techniques to predict accident hotspots. Paper accepted in 2023 SMART.

Federal District Civil Police, Brasília, DF, Brazil,
Crime Scene Analyst, Jan 2013 - Dec 2015
Spearheaded the collection and examination of criminal evidence, overseeing comprehensive crime scene analyses and delivering final reports to investigators and authorities. Successfully managed and produced more than 300 forensic reports.
Collaborated with digital forensic analysts whenever cases involved digital artifacts.
Traffic Accident Reconstructionist, Dec 2015 - Aug 2021
Steered the Traffic Reconstruction Sector, leading a team of 25 employees for two years, demonstrating leadership and organizational skills, ensuring the effective functioning of the team. Developed a web visualization application using MS Power BI to enhance decision-making strategies for accident prevention. Mentored two undergraduate students throughout the project.
Initiated and executed a social project aimed at educating public high school students on the importance of safe driving. Delivered impactful lectures to raise awareness and promote responsible driving behavior.

BRASA - Brazilian Student Association (remote).
Data Analyst, Jan 2022 - Jun 2022.
Executed data processing and analysis crucial for informing board decision-making. Gained foundational experience in AWS for content storage and extraction, contributing to efficient data management practices.

Estrategia Concursos, Sao Paulo, SP, Brazil.
Instructor, Oct 2018 - Aug 2021.
Responsible for creating ebooks and lecturing online classes in the disciplines of Data Mining, Computer Communication Networks, Operational Systems, Digital Forensics, and Telecommunications for government selections in Brazil. The company is considered to be ranked number one in the area of public exam preparation.

University of Brasilia, Brasília, DF, Brazil.
Research Assistant, Nov 2012 - Jan 2013.
Collaborated with a team of researchers led by Professor Rafael Timóteo, developing a Web-based system for Human Resources in the Federal Government Administration.

Oi (Telecommunication Company), Brasília, DF, Brazil
Network Administration Intern, Jan 2010 - Jun 2010.
Database management and analysis of enterprises' communication network contracts.
EngNet (Undergraduate Student's Company), Brasília, DF, Brazil.
Web Designer, Jan 2008 - Jun 2010.
Contributed to the team of web designers, focusing mainly on the user interface.

TECHNICAL SKILLS
Programming Languages and Software
- Php, C, CSS, HTML, Javascript, SQL, Python (Pytorch, TensorFlow, Keras, Scikit-Learn, Matplotlib, Pandas, NLTK, SpaCy), NLP, LLMs (OpenAI, Llama, Hugging Face).
- Axiom Magnet, Belkasoft, Wireshark, Cellebrite, Autopsy, FTK Toolkit, Wireshark, Tableau, Microsoft Power BI, SPSS, Matlab, Kibana, Docker, Unity, Adobe Premier Pro, Photoshop.

Languages
- English (fluent), German (basic), Spanish (intermediate), Portuguese (native).

PUBLICATIONS AND PRESENTATIONS
Papers
LIMA V., Karabiyik U.
Identifying Media Storage Locations in Baby Camera Apps: A Mobile Forensic Approach.
Accepted in 11th International Symposium on Networks, Computers and Communications (ISNCC'24)
Knowledge areas: Mobile Forensics, Storage Investigation, Cybersecurity.

LIMA V., Karabiyik U.
Advancing Crime Linkage Analysis with Machine Learning: A Comprehensive Review and Framework for Data-Driven Approaches
Under review. Crime Science Journal (2024).
Knowledge areas: Crime Linkage, Machine Learning, AI, NLP.

LIMA V., Karabiyik U, Hub X., Ozer A.
A Survey on Forensics Intelligence: Main Tasks and Remaining Challenges.
In progress. Journal of Forensic Sciences (2024).
Knowledge areas: Forensic Sciences, Forensic Intelligence, Cybersecurity.

Bautista Y. J. P., Theran, C., Aló, R., **Lima, V.**
Enhancing CyberPolicy in Romance Fraud through Prompt Engineering: A Study on LLM Vulnerabilities.
In progress. 4th International Conference on AI in Cybersecurity (ICAIC).
Knowledge areas: Generative AI, LLMs, Cybersecurity, NLP, AI.

Bautista, Y. J. P., Theran, C., Aló, R., **Lima, V.**
Health Disparities Through Generative AI Models: A Comparison Study Using a Domain Specific Large Language Model.
In Proceedings of the Future Technologies Conference (pp. 220-232). Cham: Springer Nature Switzerland.
Knowledge areas: Generative AI, LLMs, Health Disparities, NLP.

LIMA, V., Karabiyik U, Farias J., Lopes F., Melo I., Martins M.
Low-budget Equipment Facilitating Friction Coefficient Extraction for Traffic Accident Analysis
Under review. Transportation Engineering, 2024.
Knowledge areas: Traffic Accident, Traffic Reconstruction, Friction Coefficient, Skid Coefficient.

LIMA, V.; Almeida de Oliveira, J.
Identifying Risk Patterns in Brazilian Police Reports Preceding Femicides: A Long Short Term Memory (LSTM) Based Analysis.
13th IEEE Global Humanitarian Technology Conference (GHTC), 2023.
Knowledge areas: Natural Language Processing, Feminicide, Domestic Violence, Deep Learning.

LIMA, V.; Byrd, V.
Insights and Hotspot Prediction of Severe Traffic Accidents in the Federal District of Brazil.
12th International Conference on Smart Cities, Systems, Devices and Technologies
Knowledge areas: Data Science, Machine Learning, Traffic Accidents.

LIMA, V. O.; Gois, J.M.V.A.; Silva, F. T.A
Forensic Intelligence Approach On Traffic Accidents In The Brazilian Federal District.
26th International Conference on Urban Transport and the Environment, WIT Press, 2020.
Knowledge areas: Computer Forensics, Forensics Sciences, Data Analystics, Big Data.

LIMA, V. O.; Zelenovisky, R.
Accelerometer and Gyroscope Proposal to Improve Forensic Work in Brazil.
Revista Brasileira de Criminalística, 2017.
Knowledge areas: Computer Forensics, Computer Architecture, Electric Engineering.

Presentations
Identifying Media Storage Locations in Baby Camera Apps: A Mobile Forensic Approach.
<u>Oral Presentation</u>, 11th ISNCC 2024, Washington, USA. Knowledge areas: Mobile Forensics, Storage Investigation, Cybersecurity.

Identifying Media Storage Locations in Baby Camera Apps: A Mobile Forensic Approach.
<u>Poster Presentation</u>, DFRWS USA 2024, Baton Rouge, USA. Knowledge areas: Mobile Forensics, Storage Investigation, Cybersecurity.

Generative AI and Open-Source Intelligence: Exploring Capabilities and Privacy Implications
<u>Poster Presentation</u>, Purdue CERIAS 2024, West Lafayette, USA. Knowledge areas: Digital Forensics, GenAI, Cybersecurity.

Identifying Risk Patterns in Brazilian Police Reports Preceding Femicides: A Long Short Term Memory (LSTM) Based Analysis
<u>Oral Presentation</u>, 13th IEEE GHTC. Knowledge areas: Natural Language Processing, Feminicide, Domestic Violence, Deep Learning.

Insights and Hotspot Prediction of Severe Traffic Accidents in the Federal District of Brazil.
<u>Oral and Poster Presentation</u>, BRASA Summit 2022, Chicago, USA. Knowledge areas: Data Science, Traffic Reconstruction.

A Forensic Intelligence Approach On Traffic Accidents In The Brazilian Federal District.
<u>Oral and Poster Presentation</u> (rescheduled for May 2023 due to COVID19 pandemic), 22th Triennial Meeting of the International Association of Forensic Sciences (IAFS), Sydney Australia. Knowledge areas: traffic collision, business intelligence, crash reconstruction, forensics science.

Accelerometer and Gyroscope Proposal to Improve Forensic Work in Brazil.
<u>Oral and Poster Presentation,</u> 21st Triennial Meeting of the International Association of Forensic Sciences (IAFS), Toronto, Canada. Keywords: airbag, black box, traffic accident, EDR, accelerometer, gyroscope.

OTHER ACADEMIC ACHIEVEMENTS
- Peer reviewer in the 11th ISNCC 2024, as an expert in Cybersecurity, Digital Forensics and Machine Learning.
- Member of the American Association of Forensic Sciences (AAFS) and the Brazilian Forensic Science Academy (ABCF).
- Selected to mentor 2 undergraduate students through FY 24-25.
- Awarded best pitch presentation in BRASA Summit 2022.
- Highlighted as outstanding TA in the courses of Data Visualization and Cyber Forensics.
- Committee member in master dissertations (2017, 2018) at University of Brasilia.

SOCIAL IMPACT
- Volunteer work: Taught English to local careless children from 7 to 12 years old (2020). Classes were online while in the COVID19 lockdown situation.
- Lectures about Vehicle Accident Prevention and Physics for high schoolers in 2020. Lectures were online while in a lockdown situation.
- Church volunteer work organization in 2008, 2009, and 2011: Delivered food and clothes to careless families.

OTHER INTERESTS
- Sports like soccer, badminton, and rowing. Joined Brasilia's Police Soccer Team in 2017's WPFG in Los Angeles. Engaged in Purdue's Rowing Team (2021).
- Photography and video editing.
- Books about psychology, neurology, and sociology.
- Parks exploration with my wife and two kids.